

REMARKS

In the Office Action mailed October 17, 2006, the Examiner rejected claims 1-11 and 19-23 under 35 USC 112 as indefinite and also claims 21-23 as containing new matter. These rejections are traversed for the reasons stated below.

First, with respect to the rejection of claims 21-23, it is respectfully submitted that the application contains clear support for the recitation "at least about one giga ohm." This support was clearly identified in the prior response. An example of a control algorithm according to the present invention is described at pages 29-30 of the specification. This control algorithm is illustrated in Figure 12. The algorithm shown in Figure 12 is for testing the "giga seal." As described at page 29, lines 30-31: "The suction is increased until the maximum vacuum is obtained or Giga seal formation occurs." As illustrated in Figure 12, it is determined that Giga seal formation has occurred when the resistance of the seal (RSeal) is greater than 1GOhm (RSealPass) for a set time period as represented by a counter designated as "GIGA SEAL COUNT." This is clear support for the claim limitation in question.

With respect to the indefiniteness rejection, it is respectfully submitted that the Examiner has misunderstood the description of the giga seal and/or is not applying the understanding as in the art. As is well understood in the art, the high resistance seal represents a level of resistance necessary to reduce noise to a level sufficient to permit the patch clamping measurements to be made. This is described, for example, in page one of the Lynch reference submitted with the prior response. However, more to the point the term "giga seal" (and the alternate form "G-seal") used throughout the instant application is, contrary to the assertions by the Examiner, well understood in the art and well understood not to refer to a seal of any single, specific resistance level. Rather a "giga seal" refers to a high resistance seal, typically at least about 1 GOhms. This is explicitly stated at page 103 in the Molleman book also submitted with the last response. The requirement of the high resistance seal exceeding 1 giga ohm, but not being limited to a specific number has been well known in the art for many years. For example, in the seminal patch clamping article by O.P. Hamill, et al., Improved Patch-Clamp Techniques for High-Resolution current Recording from Cells and Cell-Free Membrane patches, Pflugers Arch (1981) 391:85-100, the giga seal is clearly described as follows: "procedures followed to achieve giga-seals, i.e., pipette-membrane seals with resistances of 10^9 – $10^{11}\Omega$." and "tight pipette-membrane seals, with resistances of 10-100

$G\Omega$, can be obtained ... We will call these seals 'giga seals' ... The high resistance of a 'giga-seal' reduces the background noise of the recording by an order of magnitude..." (This article was previously faxed to the Examiner on 1/10/2006). See also Lehman-Horn et al. ("The patch clamp ... technique relies on a fine tipped glass capillary to make contact with a patch of cell membrane in order to form a giga-ohm seal. This high resistance seal..." (The specific citations discussed hereinabove are just a small sampling of the use of the terms in the art. A Google search for the terms "high resistance seal" and "patch clamp" together uncovers 750 relevant hits. See attached partial search results)

The term "high resistance seal," as used in the specification and claims as referring to a "giga seal" or "G-seal" is more than simply clear, it is the standard way of referring to the seal used in the patch clamping art as established by the cited references above. Section 112 merely requires that the claim terminology be sufficiently clear so as to be understood by a person of ordinary skill in the art. (MPEP 2173.02). Given the wide use of these terms in the art as demonstrated above, their meaning and usage in the art is well understood. Moreover, the fact that a realtive term such as "high" is used does not render the claim per se indefinite as it appears the Examiner is arguing. (See MPEP 2173.05b). "Acceptability of the claim language depends on whether one of ordinary skill in the art would understand what is claimed, in light of the specification." (Id.) Given the clear usage in the art, as explained above, the terminology used is clear to a person of ordinary skill because it is the very same terminology that is used by those persons when authoring scholarly articles in that art. Moreover, given the proper understanding of the usage of the terminology in the art, there is no confusion that a giga ohm seal might refer to only a seal with a resistance of specifically one giga ohm as alleged by the Examiner. For all these reasons, the rejections under Section 112 should be withdrawn.

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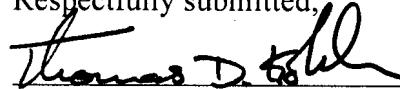
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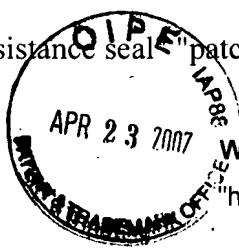
In view of the foregoing remarks, it is believed that the application as a whole is in form for allowance. Should the Examiner have any continuing objections, the Applicants respectfully ask the Examiner to contact the undersigned at 415-442-1106 in order to expedite allowance of the case. Authorization is granted to charge any outstanding fees due at this time for the continued prosecution of this matter to Morgan, Lewis & Bockius LLP Deposit Account No. 50-0310 (matter no. 061082-0005).

Respectfully submitted,

Date: April 17, 2007

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PDMS is an attractive material for **patch clamp** recordings. ... 28 (1998) 153), thereby allowing a **high-resistance seal** to a cell membrane. ...

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... the glass tip forms a **high resistance 'seal'** with the cell membrane. ... These micropipets (electrodes) are again like those for **patch clamp** pulled from ...

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Blind patch clamp recordings in embryonic and adult mammalian ...

Here we describe a protocol for the 'blind **patch clamp** method' that we ... To obtain this electrical resolution, a **high-resistance seal** between the ...

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